इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 6311 (1978): ISO Metric Screw Thread Measuring Cylinders
[PGD 25: Engineering Metrology]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

AMENDMENT NO. 1 OCTOBER 1983
TO
IS:6311-1978 SPECIFICATION FOR ISO METRIC SCREW-THREAD MEASURING CYLINDERS

(First Revision)

Alteration

(*Page 2, Table 2, col 3, entry 16*) - Substitute '0.358' *for* '0.368'.

(EDC 43)

Reprography Unit, BIS, New Delhi, India

UDC 531·718·451

(Second Reprint FEBRUARY 2001)

IS : 6311 - 1978
(Reaffirmed 2000)

Indian Standard

SPECIFICATION FOR
ISO METRIC SCREW THREAD MEASURING CYLINDERS

(*First Revision*)

Engineering Metrology Sectional Committee, EDC 43; Precision Measuring Equipment Subcommittee, EDC 43:2 [Ref: Doc: EDC 43(2700)]

1. Scope — Covers the requirements of screw thread measuring cylinders used for checking ISO metric screw threads and pipe threads covered in IS : 554-1975 ' Dimensions for pipe threads where pressure tight joints are required on the threads (*second revision*) ' and IS : 2643 (Part I)-1975 ' Dimensions for pipe threads for fastening purposes: Part I Basic profiles and dimensions '.

2. Terminology

2.1 *' Sets ' of Screw Thread Measuring Cylinders* — When three cylinders are used to measure the pitch diameter of a screw thread, they are referred to in this standard as a ' Set ' of thread measuring cylinders.

2.2 *Best Size Cylinders* — Best size cylinders are those which make contact with the straight flanks of the threads at the pitch line.

3. Material and Finish

3.1 The material shall be a suitable quality steel having the property of retaining dimension during ageing and heat treatment, and shall be wear resistant. Suitable examples of steels from IS : 1570-1961 ' Schedules for wrought steels for general engineering purposes ' are given below:

Designation	*Schedule from IS : 1570-1961*
T215 Cr12	Schedule VI
T105 Cr1 Mn 60	
T105 Cr1	
T90 V23	
17 Mn1 Cr95	Schedule IV
20 Mn Cr1	
C15	Schedule II

3.2 The wires shall be hardened. A hardness value of 700 *HV, Min* is recommended.

3.3 The working surfaces shall have a surface roughness of 0·05 Ra. The working surface shall be free from blemishes, such as scratches, pits and rust stains.

4. Dimensions

4.1 *Form* — The general form of the screw thread measuring cylinders shall be as shown in Fig. 1.

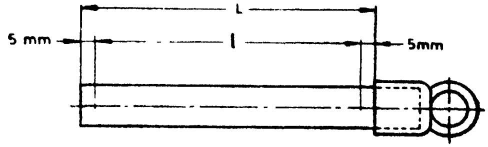

FIG. 1 GENERAL FORM OF THREAD MEASURING CYLINDER

4.2 *Overall Length* — Recommended approximate overall length *L* of screw thread measuring cylinders are given in Table 1, read with Fig. 1.

4.3 *Working Length* — The working length *l* of the screw thread measuring cylinders shall be the middle length, leaving 5 mm from both ends (*see* Fig. 1).

Adopted 12 September 1978

© January 1979, BIS

Gr 2

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

TABLE 1 RECOMMENDED OVERALL LENGTH OF THE CYLINDERS

(*Clause* 4.2)

All dimensions in millimetres.

Diameter of Cylinder		Overall Length *L* (Approx)
Above	Up to	
—	0·5	30
0·5	1·5	35
1·5	2·0	40
2·0	—	45

5. Accuracy

5.1 *Straightness* — This shall be checked by micrometer by holding wire between the anvils.

5.2 *Uniformity of Diameter* — The diameter of the working length of a cylinder shall be uniform to within 0·001 mm including any out-of-roundness.

5.3 *Diameters and Tolerances*

5.3.1 *Diameters* — The diameters for ISO metric screw threads and pipe threads shall be as given in Tables 2 and 3 respectively.

TABLE 2 NOMINAL DIAMETERS AND CORRESPONDING *P*-VALUES OF CYLINDERS FOR ISO METRIC THREADS

All dimensions in millimetres.

Nominal Diameter of Cylinder	ISO Metric Pitch	*P*-Value*
0·17	0·25 0·3	0·047 0·090
0·195	—	—
0·22	0·35	0·083
0·25	0·4	0·096
0·29	0·45 0·5	0·100 0·143
0·335	0·6 —	0·185 —
0·39	—	—
0·455	0·7 0·75 0·8	0·151 0·195 0·238
0·53	0·9	0·249
0·62	1	0·246
0·725	1·25 —	0·368 —
0·895	1·5 —	0·404 —
1·1	1·75	0·416
1·35	2	0·382
1·65	2·5	0·515
2·05	3 3·5	0·548 0·981
2·55	4 4·5	0·914 1·347
3·2	5 5·5	1·130 1·563
4·0	6	1·196

* For definition and computation of *P*-value, *see* Appendix A.

TABLE 3 NOMINAL DIAMETERS AND CORRESPONDING *P*-VALUES OF CYLINDERS FOR PIPE THREADS

(*Clause* 5.3.1)

All dimensions in millimetres.

Nominal Diameter of Cylinder	Pitch	*P*-Value*
0·53	28	0·253
0·725	19	0·439
1·1	14	0·460
1·35	11	0·644

*For definition and computation of *P*-value, *see* Appendix A.

5.3.2 *Tolerance* — The main diameter of each cylinder shall be within ±0·000 5 mm of its nominal value.

6. Marking

6.1 Each cylinder shall carry a tag on which the nominal diameter shall be marked.

6.1.1 The tags shall be suitably attached to the cylinder, either on cylinder caps or on the cylinders themselves in the case of larger sizes.

6.1.2 *Certification Marking* — Details available with the Bureau of Indian Standards.

7. Packing — Each pair or set of cylinders shall be supplied in a suitable container, well protected against atmospheric corrosion and mechanical damage.

APPENDIX A

(*Tables* 2 *and* 3)

P-VALUES OF THREAD MEASURING CYLINDERS

A-1. Definition — *P*-value is the difference between the diameter of the pitch cylinder and that of an imaginary coaxial cylinder that just makes contact with the nearest points of two thread measuring cylinders placed in diametrically opposite thread grooves of an external screw thread (*see* Fig. 2).

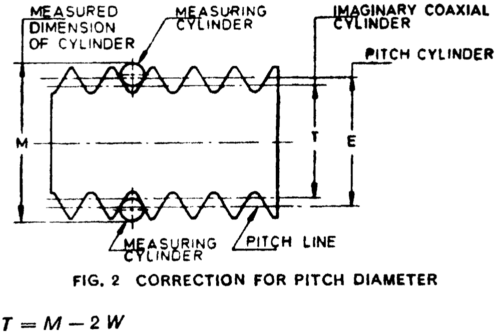

FIG. 2 CORRECTION FOR PITCH DIAMETER

$$T = M - 2W$$

and $P = E - T$

where

T = dimension under the cylinders,

M = measured dimensions of cylinder,

W = mean diameter of thread measuring cylinder,

P = P-value, and

E = pitch diameter of thread.

EXPLANATORY NOTE

This standard was first published in 1971. In view of the experience gained in the industry, it was felt necessary to revise this standard. The main variations in present revision are the use of only one grade of screw thread measuring cylinders, recommendations of materials and increase in the recommended working length of the cylinders.

Screw thread measuring cylinders are used for measuring the pitch diameter of the external screw threads. The cylinders should be so chosen that, where placed between the threads they make contact about half-way down the flanks. But it is possible to measure the effective diameter of a screw by using cylinders which make contact anywhere down the flanks of the threads as long as they clear the crest provided the allowance is made for any error present in the thread angle.

Theoretically, in order that error present in the thread angle of a screw should have no effect upon the measurement of effective diameter, the cylinder used should rest in the thread grooves so that they touch the flanks exactly on the pitch lines. A rigid adherance to this rule, however, would necessitate very accurately made cylinders for each pitch and form of thread.

Reprography Unit, BIS, New Delhi, India